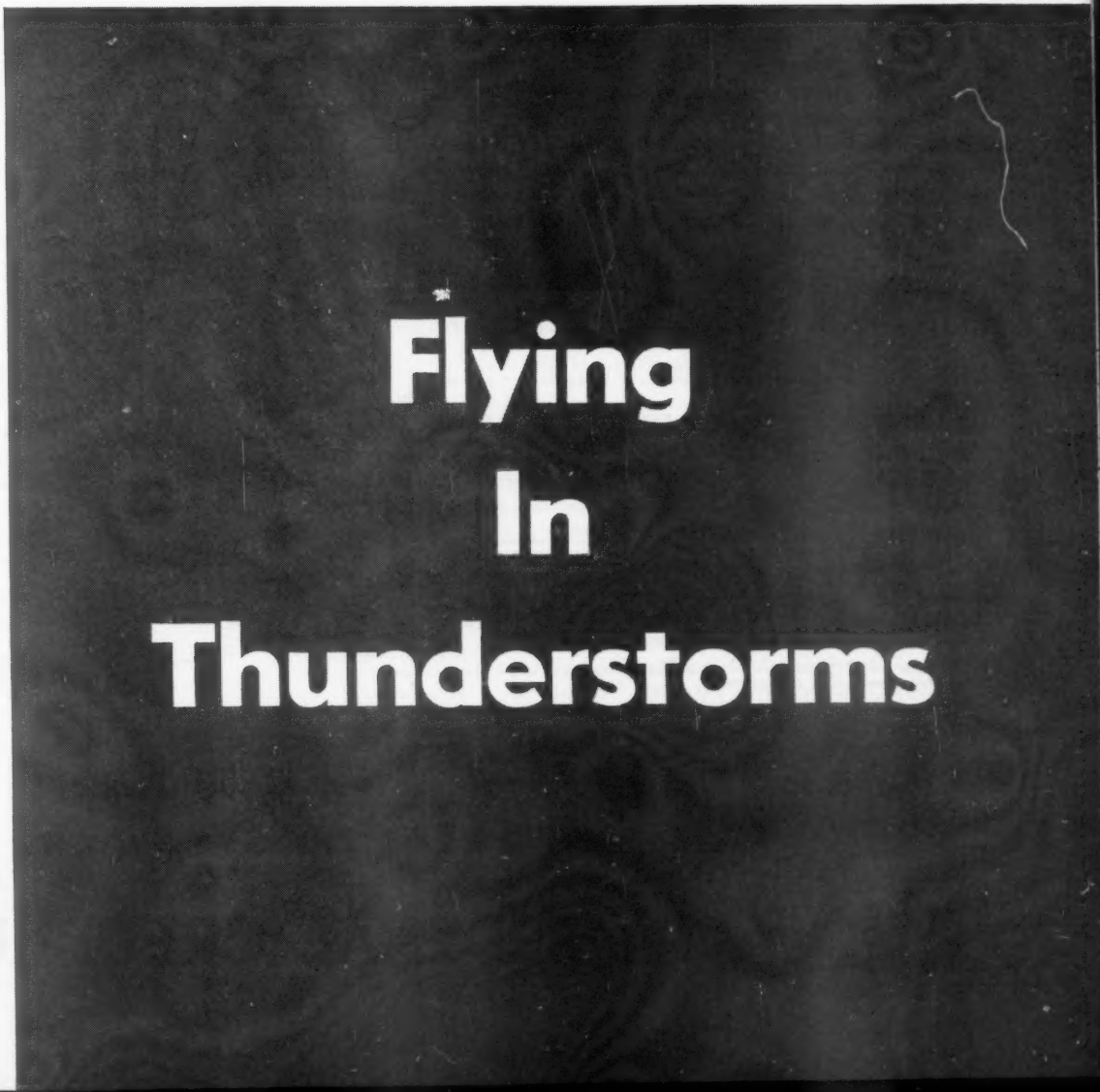
April, 1954

The Air Line Pilot

Performance Evaluations
---Page 13

It Doesn't Pay to Resign
---Page 11



Flying In Thunderstorms

—Page 3—

GREAT NEWS:

FOR ALPA CREDIT UNION MEMBERS

INTEREST RATES ON LOANS REDUCED

These new interest rates effective June 1, 1954: One (1) per-cent per month on the unpaid balance up to $400 and one half (½) per-cent per month on the amount in excess of $400.

Here's How to Join

It's easy to become a member. Only requirements are: (1) Being an ALPA member in good standing; (2) Completing application below; (3) Payment of small 25c membership fee and deposit of $5 (minimum) to a share account-total $5.25. With only one share account you can borrow money when needed. No unnecessary delays—only the time required to pass the credit committee, which, in many cases, takes only a short period. As a member you can also start a regular savings, add to it weekly, monthly, or, as you wish. A good suggestion: Many members send in their weekly or monthly expense check. It grows in a hurry. Start now and watch the $ $ $ $ $ grow.

FILL OUT AND MAIL TODAY!

I hereby make application for membership in and agree to conform to the By-Laws and amendments thereof and subscribe for at least one share in the

AIR LINE PILOTS ASSOCIATION FEDERAL CREDIT UNION

Print Full Name _____

Home Address _____ City _____

Employed By _____ Position _____

ALPA Membership No. _____ Council No. _____

Birthplace _____ Date of Birth _____

Wife's Maiden Name or Husband's First Name _____ Signature _____

Membership fee of 25c and subscription for at least one share ($5.00) should accompany this application.

Why an ALPA Credit Union Low-Cost Loan Is Your Best Bet . . .

1. Maximum signature loans of $400 compared to many credit union maximums of $300.
2. Loan Insurance protecting members of family or co-makers, in event of borrower's death or permanent disability, loan is immediately paid off by insurance company up to $10,000.
3. Automobile loans for new cars up to two-thirds (⅔) of purchase price without endorsing or holding titles.*
4. Amount of loans unlimited as long as adequate collateral or co-makers are furnished. Credit committee will go as high as $1,000 for each Captain serving as co-maker who is an ALPA member in good standing.

*Fire, theft and $100 deductible collision insurance required. You can choose your own broker, or, for convenience we have a selection of brokers who can place the protection at your request.

• A Good Place to Save • A Good Place to Invest

• A Better-Than-Ever Place to Borrow

YOUR ALPA FEDERAL CREDIT UNION

Flying The Thunderstorm Season

This is the Dirty Weather Season—Lots of Thunderstorms, Turbulence, Queer Weather Tricks. Some Tips Are Timely.

By Flight Safety Foundation
From Industry Experience

We're getting into the season of weather treachery and one problem common to all pilots: turbulence flying. It is an appropriate time for a review of some of the more important aspects of bad weather flying that have been compiled as a result of industry experience. A selection of such items from accident prevention bulletins and pilot safety exchange bulletins have recently been compiled by the Flight Safety Foundation.

Operations—Heavy Storm Areas

The following is extracted from an airline's memorandum to its Ground and Operations Departments:

"The season for thunderstorms will be with us by mid March. It is extremely important that all personnel and all departments involved in flight operation, line maintenance, maintenance engineering, and overhaul are conscious of this fact. It means we have almost thirty days in which to review the practices and procedures dealing with thunderstorm operation.

Everybody's Cooperation Needed

"The function of Dispatch and Meteorologist, as regards thunderstorm operation, is of vital importance inasmuch as the responsibility of forecast, interpretation, and dissemination of information of thunderstorm areas, line squalls, and potential tornado areas rests with them. Of no lesser significance is the need for all flight officers to provide accurate inflight information to dispatch offices and other flights relative to their inflight experience, location of known thunderstorm activity, exact location of turbulence, hail, and lightning. Past history shows that in practically every known accident due to operation in, around, or through thunderstorm areas, the catastrophe could have been averted had existing information and/or forecast information been passed on, properly analyzed and respected by all parties concerned.

"The Line Maintenance, Engineering and Overhaul function in this period of turbulence is to assure the operation of equipment required, to revitalize close inspection of aircraft systems and structures, and to be constantly aware of the hidden hazards of hail, ice, lightning, and turbulence damage.

Review Cabin Management

"It is suggested that Transportation Services review summer operating problems, emphasizing again the necessity for all cabin attendants to respect the meaning of the 'fasten your seat belt' sign. We have only recently reported two more serious cabin attendants' injuries. In both instances the seat belt sign was on. The cabin attendants had in one case been forewarned by the crew. Here again, the Flight Operations group can be helpful to both cabin attendants and passengers by making certain that adequate information is passed on relative to anticipated turbulence and the extent of it, being doubly sure that if moderate turbulence is expected the cabin attendants are cautioned to *remain in their seats.*

This Is A Serious Matter

"To point up the need for an early start, review for a moment a recent fatal air transport accident killing all on board. Forecast warnings concerning the well-developed low center and line squall area were available to both ground and flight personnel, yet operations continued in the area of known severe thunderstorms and developing tornadoes. We cannot risk ignoring such experience.

Tell Others

"Although the paragraph that touches on Ground Services responsibilities is short, it covers a large scope of our activities. We must give consideration not only to the care of equipment on the ground, but should also alert our personnel at the stations who are involved with communications, dispatch responsibilities, weather observing, and the many other related activities for which our people are responsible.

Vol. 23 No. 4

The Air Line Pilot

April, 1954

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Ed Modes, Editor

The Encounter

"In the conduct of our operations, we must at all times give proper consideration to the three factors which will very obviously determine the extent of our success. In the order of importance, those factors are:

1. SAFETY.
2. COMFORT OF PASSENGERS.
3. SPEED and regularity of schedule.

"In no case, should safety or comfort to passengers be sacrificed in favor of speed and regularity of schedules.

"There is nothing that terrifies our passengers quite as much as being flown *through* thunderstorms in which excessive 'bumpiness' is encountered, coupled with the display of vivid lightning discharges. In the past, I think we have on occasion sacrificed the comfort of our passengers, and possibly their safety to some extent, by deliberately flying through thunderstorms which could just as well have been avoided through slight detouring.

"Due to the very nature of thunderstorms (each thunderstorm situation requiring a separate analysis by the pilot), it is impossible to set down specific rules or regulations to be followed in handling such situations. The potential dangers existing in thunderstorms are:

A. Squall wind near the surface
B. Intense and adjacent up and down drafts
C. Hail

"Because thunderstorms of different regions tend to have special characteristics and because of marked differences between storms, the potential dangers must be borne in mind and such dangers suspected until the contrary is proved by observation of the particular storm."

An airline pilot suggests a better system to avoid thunderstorms. He mentioned that some of the recent experiences of other pilots as well as his own had been rather frightening, on the border of disaster. In addition, the passenger reaction, of course, is very poor.

The pilot needs additional help to locate the storms so that he can fly around them. This objective could be aided through a co-ordinated effort by all groups, Weather Bureau, ATA, ATPA (nee ALPA), ATC to establish a system for charting the clear areas through which pilots may safely fly.

This would call for the establishment of a center which would be similar in nature to the filter centers established to plot the course of enemy aircraft. These centers would receive information from pilots in flight, from radar from ships at sea and from other sources showing the location and progress of thunderstorms. *Each thunderstorm would be labeled* and its path followed and reported similar to the way hurricanes are now reported in the hurricane season off Florida.

The pilot feels if this were done flight could be a lot more comfortable and a lot safer.

Reporting Turbulence:

Psychological Blocks

Much as the pilots recognize the significance of turbulence to safety and comfort, many admit considerable hesitation in reporting it. The reasons appear to be that:

a. Pilot is afraid of establishing an "alarmist" reputation for himself.
   NOTE: Read "The Mature Mind" by Overstreet, Chapter 2.
b. Definition of terms "moderate," "severe," etc., is subject to opinion and may vary from pilot to pilot.
   NOTE: See definition below. A recording accelerometer should be useful. Weight about 1 lb.
c. Turbulence may be very local, probably missed by other aircraft flying through the area, hence a report may cause unnecessary concern or diversion by other pilots.
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3. *Light Turbulence*—A turbulent condition through which an aircraft may be flown indefinitely. It does not seriously affect the aircraft. Passengers may be required to use seat belts, but objects resting in the airplane remain at rest.

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Importance of Flight Speed

Knowledge of structural design criteria brings out the importance of observing recommended operating airspeeds while flying in severe turbulence. The gust loads ("G's") that are placed upon the structure due to gusts increase with airspeed.

Today's transport aircraft are built to withstand certain gust loads at specified design airspeed without suffering structural damage. For example: Design criteria specify that at the maximum level flight speed the airframe must be able to withstand a 30 feet per second gust load. With flaps extended the structure must be able to withstand only a 15 feet per second gust at the maximum placard speed for flaps extended. With flaps up and at the maximum dive speed the structure must also be able to withstand only a 15 feet per second gust. As speed is reduced towards the stalling speed the structure is able to withstand higher gust loads.

From the above design criteria it can be seen that it is important to keep the airspeed as low as possible and to keep the wing flaps retracted to get the most protection against structural damage due to severe gusts. At the same time it is equally important to keep speed high enough to prevent the chance of stalling which is increased by gusts and lower airspeeds.

Gust loads in excess of those used in design criteria have been measured during experimental flights through severe turbulence and on rare occasions on transport aircraft in scheduled operation. Structural damage can be expected if a transport is flown long enough through severe enough conditions, particularly if the airspeed is excessive. The best protection against such damage is common sense in trying to avoid conditions known to produce severe turbulence. If turbulence is un-

avoidable, adherence to recommendations for operating in rough air offers the best protection. The importance of relaying information on turbulence is obvious and will be treated in a later bulletin.

Beware The Equinoctial Storms

With the approach of the season of hurricanes and equinoctial storms which are widely prevalent in August and September, special precautions should be taken to prevent accidents caused by turbulence which these storms generate over a large area.

Examination of CAB records for those two months for the ten years 1940 through 1949 shows that a total of 30 accidents were attributed to weather conditions, and a large majority of those were caused by gusts, turbulence, rain, hail, thunderstorms and adverse wind conditions. Don't land during a wind shift, try to fly clear of the storms. If aircraft cannot be hangared, fly them out of the path of the storm (in Florida fly them out anyway!).

Demagnetizing Lightning Effect

"Some time ago one of our airplanes encountered a severe lightning strike in the nose area of the airplane which resulted in high magetism of many items in the cockpit area as well as the nose gear. This magnetic field was such that the magnetic compass located in the 'V' of the windshield was off as much as 60 degrees in some headings.

"The nose gear was changed, but we still had heavy magnetic fields in the structure around the cockpit. Some system of demagnetizing the structure was imperative. We came up with a demagnetizing coil that not only satisfactorily demagnetized all of the surface structure and other items in the cockpit, but was later found to be of sufficient strength to demagnetize the nose gear structure and the nose gear itself without removing those items from the airplane. Naturally, this had proved to be a great time and money saver on other airplanes in which the nose gear structure became magnetized.

"Since this is quite a problem to us when it occurs, and one that we solved practically by accident, we felt that the same problem might exist with other airlines.

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"This coil is not a cumbersome assembly, being only 8 inches in diameter, 4 inches thick and plugs into the regular 110 volt 60 cycle AC line."

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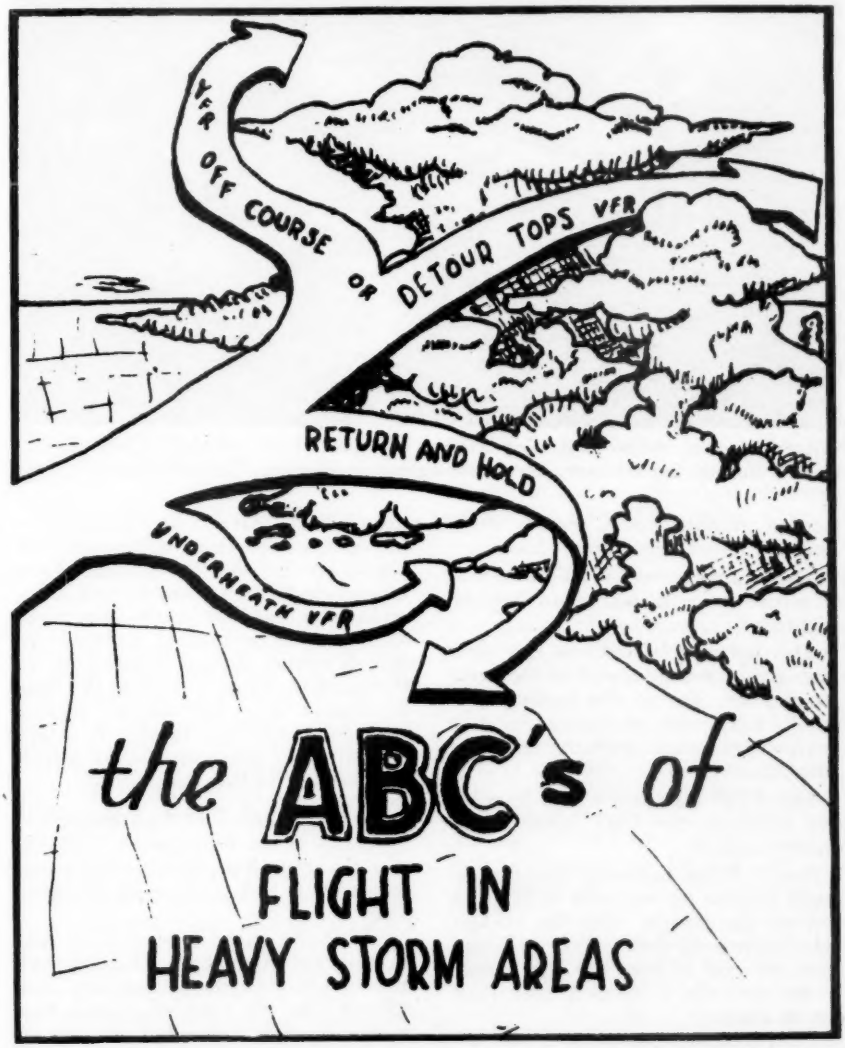

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The Captain said the lightning was in a near bright position, but in spite of this he was temporarily blinded and asked the copilot if he could see the instruments. After about 30 seconds the copilot was able to see the artificial horizon faintly, so the Captain turned the controls over to him. The Captain said the instruments appeared to dance and change colors rapidly for about 10 seconds and it was several minutes before the sensation of changing colors of the instruments cleared. A deep purple color was observed on looking out the cockpit windows.

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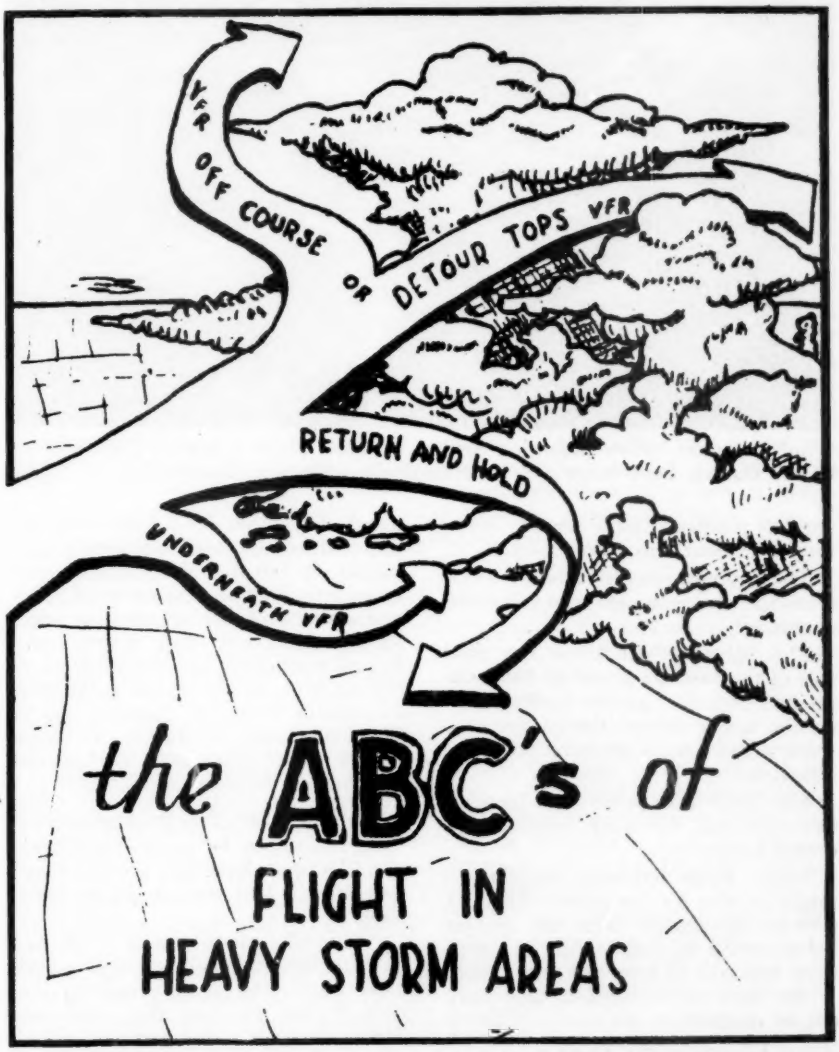

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What Happens When Lightning Strikes a Plane. Here a Model Constellation is Hit During Experiments by Westinghouse - Electric Corporation in 1948.

receded gradually until normal vision returned about two minutes later.

The passengers received no ill effects from the strike though many became frightened.

The lightning struck on the right side of the fuselage ahead of the cockpit and left through the trailing edge on the upper side of the rudder at a point where a static discharge wick was attached.

The VHF transmitter was inoperative although the VHF receiver operated normally.

Note: When lightning threatens, it might be wise for one pilot to keep his eyes in the cockpit with the cockpit lights turned up full bright. Sea captains are said to keep one eye closed. If the open eye is blinded, they have one in reserve!

An Effect Of Lightning

"Recently, one of our DC-6 aircraft experienced a lightning strike. A careful inspection of the ship structure, its accessories and wiring disclosed everything normal. The flight proceeded and operated normally. After the aircraft had been on the ground approximately three hours, and while being prepared for another flight, it was found that all engine fuel and oil pressure indicators, super-charger oil pressure and all heater fuel pressure indicators were inoperative. Ground checking disclosed that the various transmitters of these units were electrically okay pin to pin but that their magnets had apparently become demagnetized. After replacement of the transmitter units, all operation was again normal. Although continuing our investigation of this incident, we are unable at this time to explain why the aircraft systems functioned normally before. It would be well for all pilots to be alert against a recurrence of this irregularity."

Lightning Sets Fire to Transport

"Quick action by an alert mechanic of a Transport Squadron saved a transport after it had been struck by lightning.

"While the plane was at 9,000 feet en route near Lancaster, a sudden flash more vivid than those preceding was noticed. At the time the plane was passing through a thunderhead, one of many encountered on the flight.

"Immediately after the flash the pilot noticed a burning odor. It was traced to the propeller deicer pump, located aft of the pilot's seat.

"The pump was turned off and the mechanic took a CO_2 bottle and stood by until the motor had cooled.

"As he turned to station himself in the radioman's seat, he discovered flames shooting up through the floor boards under the seat.

"He seized the fire axe, chopped a hole in the flooring and expended the carbon dioxide, extinguishing the fire.

"Later, examination on the ground showed that the fire had been caused by the lightning bolt which struck the fixed antenna on the belly of the plane.

"It melted the lead-in at the insulator, then jumped to the nearest metal conductor which was the supply line for the alcohol de-icer pump and punched holes in the supply line, allowing alcohol to escape and burn. Some hydraulic fluid which leaked was also ignited.

"The mechanic's cool-headed action averted a serious accident, for ceilings in the vicinity were below 500 feet and a safe immediate landing wasn't possible."

Lightning Strikes The Pilot?

Recent incidents and research compel further investigation into the effect that a lightning strike may have on safety. Lightning strikes on aircraft are numerous, occur daily, but hitherto have been regarded as harmless because of the protection afforded by all-metal design. Lightning has been known to damage all metal aircraft by causing control-surface bearings to seize, by affecting radio apparatus, by exploding parts like tail cones (The Air Line Pilot—April, 1950), by shattering windscreens, by temporarily blinding pilots.

Until recently there has been no authentic report of severe injury to a pilot.

Now comes the incident of a pilot flying in a formation of three single seater military planes, all-metal, above 35,000 feet into a storm. Marks of zipper fastenings burned into the flap behind the zippers on his uniform and flash burns on his neck following the lines of the cord leading to the earphones with pilot in sitting position indicate that he was struck by lightning while inside the plane. The helmet was not found with the body. Presumably the strike came through the plastic canopy which has not been found. Experimental evidence corroborates this probability. The strike was probably severe but he did not lose muscular control because he was able to operate his ejection seat and then his parachute. The chute could have been carried upwards in the storm; he may have died of anoxia.

The situation as regards transport is probably not so serious because of the more complete protection afforded by the Faraday cage. Nevertheless, further attention should be given to bonding non-metallic areas on the outer surfaces of aircraft so that they will be less likely to be pierced by an electric discharge.

It's Ten to One You Can't Make It

Pilot Retirement Is an Important Concern When You Consider the Odds—Only One Out of 10 Will Still Be Flying at 55.

By Capt. S. J. Devine
ALPA Retirement Committee

More and more air line pilots are publicly professing their concern about pilot retirement. Active committees organized on more than a few air lines have had their conception not by a single directive force, but rather by groups of pilots working independently of each other but still arriving at the same conclusions in an almost mysterious and certainly spontaneous manner.

Correspondence, received daily at the Home Office, emphasizes the fact that the members in the field are not only concerned, but, on occasion, actually worried about retirement.

What is the driving force behind this grass-roots movement? Is it a supposedly unfounded fear of the toll the nature of the profession takes? Is the group becoming older and, therefore, more concerned about retirement? Is there extreme dissatisfaction with the existing retirement plans, and extreme concern where there is no plan at all?

The Advisory Committee on Retirement was organized by President Sayen under the mandate of the 12th Convention. Its birth was the natural evolution of the movement so discernible in the field.

Pilots Aware of Trend

There is a general trend apparent in the economy of the country which demands that more attention be paid to pensions and retirement. Pilots are more acutely aware of this than the average worker, for it is no mere figment of the imagination that a pilot's professional life is relatively short. For proof of this statement, the Retirement Committee offers the following facts.

The preliminary findings of the Committee indicate that the rate of attrition of the air line pilot group (excluding probationary pilots) approximates 3% per year. More amazing is the age of those included in the 3%. In 89% of separations studied so far, the pilot has been less than 40 years of age! Of a given group of 100 copilots, 25 years of age, only 10 will have a mathematical chance of flying until age 55. From this observation, comes the title of the article. The fears of those forward-looking pilots who are hopefully planning for their future are far from being unfounded. Theirs is the rational fear of a real danger, yet unsolved.

The Committee's findings indicate that the pilot group is becoming older, 2.4% of active ALPA members today being more than 50 years of age. This is an increase of 1% in five years. Only .65 of one per cent are less than 25 years of age, a decrease of 3% in five years. However, much concern should be evidenced over the smaller number of men remaining in active service after age 50 compared to the total number entering that age group.

Analize Existing Plans

An analysis of existing retirement plans on the various air lines prompts some general observations.

All of the plans are sound. In fact, in most cases, flexibility and benefit accrual have been sacrificed to an unnecessary degree to attain such soundness.

The rate of pilot contributions is very high. It far exceeds the prevailing industry rate for contributory plans. This is offset, of course, by retirement benefits which are correspondingly high.

The normal retirement age of 60, as found in most airline plans, is a rather weak recognition of the problem of forced pilot retirement. It is, however, a necessary improvement over the normally accepted age of 65 for industry in general. Lack of liberal vesting provisions compound this problem of forced retirement.

ALPA Retirement Committee

The ALPA President's Advisory Retirement Committee is composed of: S. J. Devine, UAL, Chairman; F. A. Spencer, AA; M. J. Fenello, EAL; D. B. Kuhn, TWA; D. R. Bucklin, CAP; and H. G. Evans, PAA.

Inflation is the deadly enemy of all pension plans. None of the air line plans, with the sole exception of the Panagra Plan, make any attempt to counteract this destructive force.

Only two plans offer a disability feature of any nature. Disability, when written into a retirement plan, can be a prohibitively expensive item. Even a so-called good disability provision would fall far short of a pilot's ideal.

Recently installed plans, by virtue of their recency, accentuate the problem of the superannuated pilot. In areas where no plan exists, the problem is only slightly more acute. More fortunate are those pilot groups whose companies have plans more than 10 years old.

Unilateral Plans

Again, with the single exception of Panagra, none of the existing plans are children of the collective bargaining process. All are unilateral plans, with unilateral provisions. It must be emphasized that pensions are not gifts or gratuities granted by benevolent employers in fulfillment of a moral obligation to old and faithful employees. Whether resulting from collective bargaining or otherwise, *they constitute deferred wages for services currently performed.*

They are part of the hire which workers receive for their labor. It has been made plain in NLRB and court decisions that employer payments to retirement plans are a form of wages, earned by the workers through the performance of services called for in the working agreement.

It is the aim of the Association to bring pilot retirement plans within the scope of the working agreement and thereby obtain mutual acceptance of the above fact. A pilot's right to share in the administration of his retirement plan and in the control of his equity in the funds must necessarily be established and should be so established by collective bargaining.

The UAL MEC Meets at the Home Office April 12 and 13.

The New 1954 C

The EAL MEC Meets at the Home Office April 14 and 15.

The Flying Tiger MEC Meets at the Home Office April 12 and 13.

54 EC'S Take Over

The TWA MEC Meets at the Home Office April 15.

Flier's Forum

An Encounter With A "Twister"

By Capt. Edwin Boyce, TWA

This is one of those real stories in life that is both a duty and a privilege to write. It is a duty so those that will understand can perhaps gain something to learn more of the forces of nature, and a privilege, for we were spared being hurled into the ground and another unsolved accident being charged to pilot error.

Our Super Constellation flight left Los Angeles late, being held up for late passengers. This made the timing perfect for our non-stop flight to New York to arrive over Idlewild Airport at the same time as the storm. The crew consisted of Captain E. S. Boyce, First Officer R. R. Buckley, Flight Engineer W. B. Stout and Hostesses B. Sechrist and A. Pickering.

Routine Until Descent

The flight was very routine and on top most of the time at 21,000 feet until we started our descent. From Allentown we had forty degrees of drift, very unusual for a fast airplane. Our weather forecasts received before and during the last part of the flight made no mention of turbulence, but I expected moderate turbulence; for with such strong south southwest winds aloft and winds of forty to fifty miles an hour from the northeast on the surface, a good shear with turbulence could be expected at lower levels. I have encountered this same condition many times before, but by slowing down to turbulent speed, have always managed to descend through this turbulent level with only a few unpleasant seconds, even though other flights apparently had more trouble than we encountered. So, when a Northwest Airlines' flight reported turbulence just ahead of us, it was expected. Idlewild was reporting eight hundred feet ceiling and three miles with no remarks of any unusual condition. Northwest requested clearance to return to Red Bank, and later landed at Philadelphia. I had informed the Hostesses we expected some turbulence and requested them to check every seat belt immediately.

A "Crazy Jumble"

So, when we were given clearance to descend to 3500 feet and later to 2500 feet, we expected moderate turbulence, where power application will control the airspeed, and headings and altitudes are not too difficult to control and without too much strain on the airplane or its passengers. We encountered such turbulence on the descent we had to pull up a thousand feet to 3500 feet to let Northwest pass under us and were then cleared to the Idlewild Range Station at 3500 feet. Just about the time we arrived over Idlewild Range at 3500 feet, we hit one updraft that was about as hard and sudden as if we had flown into a runway at about a twenty degree angle. We were given no choice of having enough and being allowed to get out of the area, for violent turbulence of a kind I had never heard of followed immediately with headings, altitudes, and attitudes becoming a crazy jumble at a rate and speed no one could even hope to keep up with. All the while a wild buffeting continued, which was not due to a stalled condition, with the force and rapidity of a huge riveting hammer. This intense force seemed to be striking us from all sides. Every change in attitude the airplane assumed came with a suddenness of a vicious snap. Passengers and Hostesses later reported in their own words that the inside of the fuselage resembled "a huge sausage with both ends being violently twisted." I believe this flexibility is probably the great reason the plane held together.

Like a Free Object

At the same time the airspeed indicators began to rapidly move back and forth at about one second intervals from 100 to over 300 indicated. At other times it moved so rapidly it was just a blur. The Flight Engineer later reported he had great difficulty in keeping his head from being battered on his desk and instrument panel. We had ground contact occasionally through what appeared to be heavy snow, although we had been in rain below 12,000 feet on the descent. During such times as we were in contact it was evident that the direction the airplane was pointed had absolutely no bearing on its direction of progress. We were just like a free object being kicked around by forces much faster than the maximum speed of the airplane. Once we saw the airport runways about six hundred feet away and at the moment we were traveling at right angles to the way we were headed; another time we were in a left vertical bank and being viciously turned to the right.

It would be impossible to know or describe all the different attitudes of the plane; things were happening just too fast. We made every effort to regain control. The fact that the airplane didn't break up immediately gave me reason to believe it would withstand further abuse, and, if we were to be thrown out of the storm we would be under control again. Our Captain Stewart had taxied out to the warmup apron for a northeast takeoff just before the storm hit. He later told me that for a few minutes it was wild on the surface with the wind coming from all directions, but after several minutes the storm apparently passed on east.

Control Regained

We finally regained control heading northeast, still in moderate to severe turbulence, but we were able to hold our heading and altitude with take-off power and 150 indicated. This lasted two or three minutes and we suddenly started to climb and we had no further serious trouble. We were cleared back to the ramp again, but to me that was out of the question for it would probably mean going right back into the storm. We remained on instruments, received further clearance, and landed at Boston without further trouble.

The amazing part of this whole incident is that it happened over

main terminal fully equipped with radar, weather bureau and control tower, our own weather bureau being just a few miles distant, yet not a single word was ever given out by anyone on the ground concerning the storm. Even after Captain Stewart took off and was leaving the area he overheard another flight telling airways in no uncertain terms to clear him out of the area for he was breaking up. The Weather Bureau map at Idlewild during our wild ride shows an intense low centered just west of the lower Bay Region with a warm front to the east and a cold front to the south, the two converging over the airport at Idlewild. Sequence reports show a rapidly falling barometer and pressure unsteady—nothing to indicate such a storm.

The fact that the Super Constellation we were flying had no structural damage speaks well for the airplane, for we know it withstood loads far in excess of design. Here, too, I believe the control surfaces stayed on because the boost control dampened the forces slamming the controls around. We were against the control stops time and time again.

Real Teamwork

My crew worked as a real team. At no time was an order misinterpreted or passed up. And the passengers later explained to me the wonderful self-control of our Hostess, Miss Sechrist, who managed to keep talking to the passengers over the public address system during the storm, removing her shoes to move around the cabin taking care of sick passengers, even though we were still in moderate turbulence after the storm, so that she would have less chance of breaking an ankle.

In the future I know I will be on the lookout for such a weather setup over a terminal regardless of forecasts. Also, ceiling and visibility minimums only make an approach legal; other factors may make it impossible. But if this account will help any pilot avoid just one such ride as we had, then it has more than served its purpose.

It Doesn't Pay To Resign

Resignation Has a Profound Effect on Your Rights. It's Worth Thinking Over Twice Before You Do. Here's Why.

F. Harold Bennett
Head, ALPA Legal Dept.

At regular intervals the Association receives a letter or a call from a member expressing high indignance at the feeble reasons advanced by his company for his dismissal. After hearing the facts surrounding the severance and assuring such member of our complete agreement with him, and expressing the opinion that a properly processed grievance will bring about his restoration, without loss of pay, seniority or other job benefit, it is then discovered that the member has tendered the company his written resignation! At this point it is explained to the member that his resignation places him outside the definition of employee and thus cuts him off from the use of the grievance machinery of the employment agreement, but he is dismayed, since, according to this thinking, he is at liberty to withdraw his resignation.

Complete Severance

If an employee volunteers his resignation to his company and it is accepted, or acted upon, the severance is complete and the company is not required to recognize a withdrawal of such resignation. Additionally, a resignation precludes any issue respecting the propriety of the separation since it interrupts the employer-employee relationship and thus denies the resigned employee access to the grievance provisions of the employment agreement.

His situation being thus explained to the resigned employee, he still remains undisturbed, stating that his case is different since the resignation was induced by "duress" and therefore of no effect. Duress is defined as: "An *unlawful* constraint exercised upon a man whereby he is *forced* to do some act that he otherwise would not have done," and while it is true that a resignation which is induced by duress is in fact no resignation, it is seldom indeed that the facts surrounding the incident will support this defense.

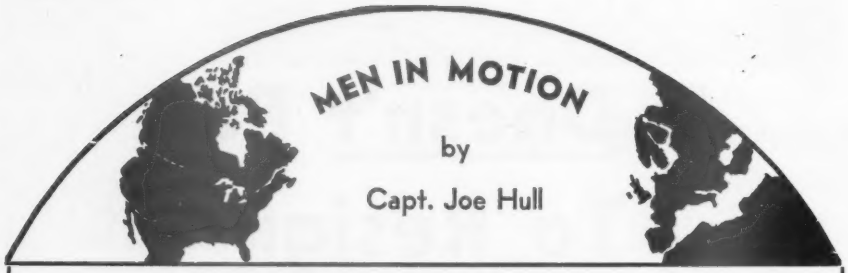
One Decision

In De Camp Bus Lines, Inc., 6 Labor Arbitration Reports 390, the Arbitrator states the general rules that govern cases of the type here under consideration:

"An employee who after receipt of discharge notice, accepts employer's invitation to resign, must be deemed to have quit voluntarily and may not later retract such resignation, despite the Union's contention that the resignation was obtained by duress.

"Lamb was faced with a choice between a discharge by the company and a voluntary resignation. If the discharge had been made effective, he would have had the right to proceed to challenge the right of the company to discharge him through the grievance machinery including arbitration. On the other hand he considered the possibility that his challenge might be unsuccessful and that he would obtain not only a few more weeks of employment, but also a cleaner record for other possible employment out of a resignation, rather than a discharge. Whatever the motivation, it is apparent that there was a problem primarily to be solved by Lamb himself. Whether the decision was the wisest choice is a matter not pertinent, to the present proceedings. He made the decision voluntarily and with such independent counsel as he saw fit to obtain."

An employee should *NEVER RESIGN* until he is fully appraised of the import of such action, has consulted his ALPA representatives, and he is certain that it is his proper and desired course to pursue.



MUSHROOMS OF STEEL

As the scientists of the world improve the lot of the common man from year to year with technological advances, the airline pilot, because of his highly scientific profession, benefits in many ways from these new inventions even though some of them may not materially reduce his work load.

But to the man who is one of the very few artisans in the world whose hands are entrusted with a million dollar machine every working day and who must make his living matching wits with nature and his fellow man, there has come in the past five years a development in the electronic field that is both a source of joy and discouragement.

Television—the modern miracle—is here. But with it has come an alarming number of very high transmitting antennas, all of them adjacent to the big cities where the airline pilot takes off and lands. It is no coincidence that these lofty needles of steel are located near the cities because TV entertainment and large air terminals are synonymous with centers of heavy population.

Antennas have always been a hazard to the aviator from the years of the roaring twenties when radio made its debut and was welcomed into the American home as no other method of public dissemination had been. But radio's revolutionary effect upon the average home life was only an early rehearsal of the greater show which was to unfold in the late forties when, at last, the miracle of television became a reality.

Early radio antennas almost never exceeded 300 feet in height because this was high enough to emit a good signal. But the peculiar propensity radio waves have for bouncing off the Kennelly-Heaviside layer of ionized atmosphere, which varies in altitude above the earth with the time of day, is not shared by the elusive and penetrating television wave. It travels straight out only as far as the horizon, requiring a TV station to have a much higher transmitting antenna if widespread reception is desired. TV reception is directly commensurate with the height of the antenna and many stations, in their competitive haste to increase their listener-viewer audience, have erected tremendous spires of steel into the sky to incredible heights.

In New York City every major TV station except WOR-TV has relocated its transmitter to the top of the Empire State Building, the highest man-made structure in the world, a breath-taking height of 1,474 feet above the ground, illustrating perfectly the importance of propagating the wave from the highest possible vantage point. But this has had only a negligible effect upon the New York-bound pilot; he learned long ago to avoid Manhattan's skyline like the plague and he has adequate radio aids to keep him in the clear. The pilot's concern is not so much with antennas on high buildings; it is the growing trend toward the raising of tremendous towers in the comparative wide open spaces where he has enjoyed freedom of movement for years that is causing him serious misgivings for the future. He observes—almost with disbelief—the ever-increasing heights that engineers have found feasible in erecting these immense structures, most of which are stressed to resist a 125-mile an hour wind.

Memphis sports a TV tower over 700 feet high not many miles from its fine airport; Birmingham has a modest 500-foot tower

(Continued in Adjoining Column)

only four miles off the ILS localizer but what this antenna lacks in structural height is more than compensated for by the terrain. *It is on the highest of several mountains which surround the airport,* rising to more than 1,200 feet above the field elevation. Of the cities built on fairly level ground, Atlanta is the proud possessor of a very high tower; Miami, Kansas City and Chicago have their hazards. But to Cleveland must go the grand prize for having erected the grand daddy of them all—an incredible product of the structural steel engineer's genius, *a prodigious monstrosity just under a thousand feet in height!* And to pour salt into the grievous wound already inflicted, this unbelievable tower has been built upon the highest plateau of ground adjacent to the city, only a few miles from the busy Cleveland airport.

Growing Menance

Is it not about time that we squared off and took a look at this growing menace to the welfare of air commerce with more objectivity than we have displayed in the past? With these tremendous towers—which undeniably bring much happiness, education and entertainment to a tense and worried world—springing up almost overnight like mushrooms all around us it seems inevitable to this writer that soon we shall be shunted about in aerial corridors such as the blockade of Berlin produced when the airlift pilots flew food and supplies into the beleaguered city. How else can it end?

Let-Down Techniques

In the meantime, some of us have already revised our let-down techniques for airports such as Cleveland, staunchly — and old-fashionedly — refusing to be brought down to collision level by GCA until we have crossed into an unobstructed quadrant of the ancient and almost forgotten range station. To us there is nothing so reassuring as that aural change of signal. So, if you happen to find yourself on top of a flight in the stack some low-ceiling night and the guy below you "wastes" a couple of minutes proving his position, it will at least be charitable of you to be patient and not become annoyed with the "Doubting Thomas" non-conformist.

He is simply making sure that he does not darken Aunt Penelope's screen while she's watching Groucho.

La Paz Demonstrations at 13,400-foot airport. Feathered at V_1, DC-6 makes take-off and completes climb out.

Performance Studies at 13,400 Ft.

Pilots, Engineers, and Operations Personnel All Help in Evaluating Safe DC-6 Operating Levels at World's Highest Airport.

By T. G. Linnert
Head ALPA Engineering Dept.

When Panagra decided to inaugurate DC-6 and DC-6B operations into the world's highest large-scale commercial airport at La Paz, Bolivia, South America, they were faced with one hurdle: to obtain performance information upon which to determine a safe operation prior to inauguration of DC-6 scheduled service into the South American airport. Takeoff and landing certification of the aircraft did not exist at 13,400 feet, the altitude of the La Paz field.

Recently a group of pilots, engineering, and operation personnel flew to La Paz to conduct performance tests to determine the criteria for such an operation. Those who took part were: Capt. W. B. Chamberlain, PGA pilot; O. L. Wilkinson, Hydroaire Engineer; T. G. Linnert, ALPA Engineer; J. S. Laws, PGA Maintenance Engineer; P. M. Johnstone, Douglas Aerodynamist; R. M. Gross, CAA Flight Test; J. Shroades, Fairchild Engineer; E. B. Hummel, PGA Assistant Chief Pilot; A. Kopp, PGA Assistant Chief Pilot; A. Secada, PGA Operations Engineer; S. T. Mitchiner, PGA Power Plant Engineer, D. R. Buell, Douglas Flight Test Engineer; L. G. Domning, PGA Assistant Chief Pilot—Technical.

Pilots, Engineers, and Operations Personnel Who Took Part in Panagra's DC-6 Performance Evaluations at La Paz High-Elevation Airport.

Two Take-Offs

Flight demonstrations included two take-offs with the propeller stopped at the V_1 speed and the take-off continued and climb out made with three engines operating. Several landings were made to determine stopping distances with normal wheel braking requirements. Several accelerate-stop trials were made to determine the distances required to accelerate the airplane to the V_1 speed distance and then abandon the take-off and come to a stop.

Representative performance take-off, landing, and accelerate-stop are shown in the three tables on page 14. It is to be pointed out that the data shown in these tables was recorded as secondary checks of the estimated characteristics of the DC-6 airplane at La Paz. Due to the variables of weather, wind, power, data, velocity and visual inaccuracies, it is highly probable that the observed data will not be com-

(*Continued on Page 15*)

Date: Jan. 20, 1954
Location: La Paz, Bolivia (13,400 ft. elev.)
Runway 27 El Alto Airport

ONE ENGINE INOPERATIVE TAKE-OFF
(Observed Data)

TABLE NO. 1

Airplane Douglas DC-6 (Panagra)

Weight (lbs.)	Wind Component (MPH)	Temperature (F)	Humidity (V.P.)	Distance to Become Airborne (V_2)	V_1 Speed (MPH)		V_2 Speed (MPH)		Height at end of Runway (10,200 ft.)	Flap Setting	BMEP	M. P.	R.P.M.	Remarks
					Indicated (TIAS)	Ground (Calculated)	Indicated (TIAS)	Ground (Calculated)						
81,000	10 mph Tailwind	58° F	0.3 in. Hg.	7450 Ft.	113	154	125	169	100 Ft. (Estimated)	15°	190	Not Observed	2600	Mixture Control to idle cut-off and propeller feathered at V_1.

FIG. 1

ACCELERATE-STOP DATA (OBSERVED)

Date: Jan. 20, 1954
Location: La Paz, Bolivia (13,400 ft. elev.) Airplane Douglas DC-6 (Panagra)

TABLE NO. 3

Weight	Wind Component (MPH)	Temperature (F)	Humidity (V.P.)	Distance to V_1 (ft.) (est.)	V_1 to stop (ft.) (est.)	Total Accelerate-Stop Distance (ft.)	Remarks
81,000	10 MPH Tailwind	55	.25	4800	4500	9300	Actual accelerate-stops were not scheduled in the test program since the final data will be obtained from separate accelerations and separate stops. The data shown here is based on segmented data at estimated V_1.

FIG. 2

LANDING DATA (OBSERVED)

Date: Jan. 20, 1954
Location: La Paz, Bolivia (13,400 ft. elev.) Airplane Douglas DC-6 (Panagra)
Runway 9 El Alto Airport

TABLE NO. 2

Landing Weight	Wind Component (MPH)	Temperature (F)	Humidity (V.P.)	Distance 50 ft. Height to Touch Down (Approx.)	Total Landing Distance (Approx.)	Flap Setting	Touch Down Speed (MPH)	
							Indicated, TIAS	Ground Speed
80,000	10 Headwind	55	0.25" Hg	1400	5000	30°	115	137

FIG. 3

pletely indicative of the ultimate performance characteristics of the airplane. Final evaluation of the airplane's performance will be based on photographic record of all phases of the test program and will be submitted to the CAA for approval of the La Paz operation under CAR Part 4b.

Penalizing Conditions

Although the demonstration runs were made in January, this time of the year is the summer season at La Paz, Bolivia. Due to the summer temperatures, the observed data in the tables represents performance obtained during performance penalizing conditions. For the one engine inoperative take-off, the temperature for the altitude was 40° above standard. This temperature, in addition to decreasing climb rates, also increased acceleration distances and landing distances. Due to the high ground contact speeds, the aircraft structure had to be analyzed for the high spin-up speed of the wheels.

Accompanying the high altitude touch down speeds, the flight demonstration program included accelerate-stop demonstrations with and without the use of the *Hydroaire "Hytrol"* non-skid wheel braking control device. This device was given a real work-out on the 10,200 ft. unpaved landing strip at La Paz, which is at an elevation of 13,400 ft. above sea level. The runway surface conditions vary from pebbles that roll under the wheels, to the sand surface, then hard clay-like surface, etc. In view of this condition, and with due analysis of deceleration data, the non-skid wheel braking device will be given every consideration for early service testing.

A Realistic Look

Panagra is to be commended for taking a very realistic look in determining the safety levels necessary for operation into the world's highest commercial airport. All performance demonstrations were realistic and representative of actual air line operation. It is generally conceded that the Douglas DC-6 operation into La Paz and other similar high altitude airports along the routes of Panagra will create new standards for human comfort due to its pressurization equipment and other fine qualities of this advanced type airliner. Considering the penalties that are involved in adopting a modern transport into service on the unorthodox routes of Panagra causes reflection on the problems that must have been faced when using Ford Tri-Motors, DC-2, DC-3 and DC4 aircraft.

Panagra's experience with the operation of these older types has brought it to the firm conclusion that there is no substitute for on-the-spot training under actual service conditions when the maximum is to be demanded of machine and man. In accordance with this conclusion, all pilots flying the DC-6 through Bolivia have been taken to La Paz and thoroughly familiarized with the performance and characteristics of the airplane under those extreme conditions.

CAA Approves

One remark that came from the group which points out one of the oddities of high terrain airports is that with the pressurized cabin of the DC-6 airplane, the passengers and crew can actually come down 3000 ft. in cabin altitude before take-off at the La Paz airport. This feature makes for increased human comfort where the lack of oxygen due to the high altitude is keenly felt by almost everyone except local residents.

Since the tests, CAA approval has been received for this operation and all objectives have been achieved or exceeded by a substantial margin. Scheduled operations began on March 13th.

(Advertisement)

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YOU CAN NOW ENROLL IN ALPA's GROUP LIFE INSURANCE PLAN

When? Enrollment will take place from May 1 through July 31.

How? Each member of ALPA will receive at home **by mail** in the next week complete descriptive material. Included will be an "Acceptance Agreement" form which should be signed and returned immediately. No remittance need accompany this form. You will be billed later.

What? $10,000 group life insurance to give you low cost estate protection at cost through the Equitable Life Assurance Society of U. S., payable on death from any cause. There are no exclusions and no medical examination is required.

Who? All active, apprentice, and executive active members of the Association in good standing may apply for this coverage.

At the close of the enrollment period, returns will be evaluated to determine if a sufficiently representative group desire this low cost insurance.

What Will It Cost You?

Less than you'd have to pay for comparable coverage.

Here's Why . . .

- This is low-cost group life insurance for air line pilots only. It should reflect the physical selectness of the pilot group.
- Dividends will be returned to ALPA to lower the cost of your insurance. (If you all get together and decide not to die, it's on the house.)
- This policy covers death from **any cause.** There's no surcharge for aviation coverage. You can save from $30 to $50 per year merely by using this policy for aviation coverage.
- An initial premium rate of 60c per month per thousand, or $6.00 per month for $10,000, will apply. But the younger the average age of the group's participants, the lower the rate. (If you're 101 or so, you're really in!)
- Like ALPA's Mutual Aid and Loss of License programs, the objective is to pay a dollar in benefits to a pilot for each dollar in premiums paid by a pilot. Any savings accrue to you.

Pilots Are a Physically Select Group
This Is an Opportunity to Take Advantage of It

THIS WILL BE DISCUSSED AT YOUR NEXT COUNCIL MEETING